

Vol. 5 No. 1

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## Continuing Concern over Antibiotic Resistance Prompts Extended Public Education Campaign

In 1998 health officials in Washington became alarmed when results from a new surveillance system showed that bacterial resistance to common antibiotics had increased dramatically. Between 1997 and 1998, 24% of *Streptococcus pneumoniae* isolates reported through the surveillance system had decreased susceptibility to penicillin and 11% were highly resistant. In contrast, less than 3% of pneumococcal isolates collected in studies between 1992 and 1996 were highly resistant to penicillin.

According to the Centers for Disease Control and Prevention, approximately three-fourths of all outpatient antibiotics are prescribed for otitis media, sinusitis, bronchitis, pharyngitis, or nonspecific upper respiratory tract infections.<sup>1</sup> Many of these prescriptions are unnecessary, as these infections are often caused by viruses rather than bacteria. Numerous studies have

shown that reducing unnecessary antibiotic use also reduces antibiotic resistance.

Armed with this information and broad support from the state's infectious disease, pediatric, and family practice communities, the Department of Health began a campaign in December 1998 to educate the public and providers on appropriate use of antibiotics. The campaign was particularly focused on the pediatric outpatient population, a group known to have both high antibiotic usage and high levels of resistance.

The latest data from the statewide Drug Resistant *Streptococcus Pneumoniae* (DRSP) Surveillance System shows that the perceived increase in resistance levels does not appear to be rising over last year's estimate. Table 1 compares resistance patterns from the first two years of data collection. Overall, the incidence of bacterial isolates that

*Continued page 4*

## Update on Hantavirus Pulmonary Syndrome and Rodent Control Efforts in Washington

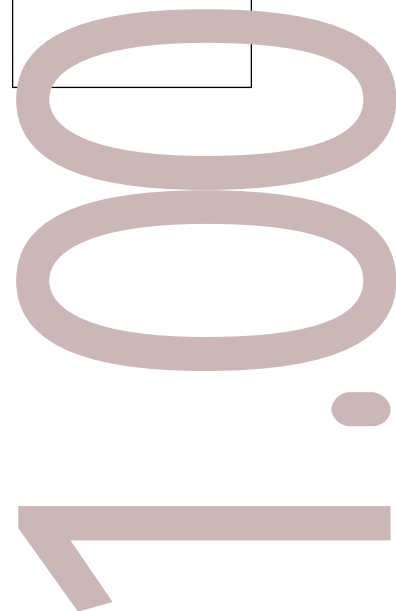
Five cases of hantavirus pulmonary syndrome (HPS), including one fatality, were reported in Washington during 1999. Four cases occurred in residents of counties west of the Cascade Mountains (one each in Lewis, Snohomish, King, and San Juan counties) and one in Klickitat County in Eastern Washington.

Of the cases occurring this year, four infected persons lived in rural locations where rodents or rodent signs were reported or detected during the case investigations. One person who lived in a suburban area reported minimal rodent exposure but had traveled to a rural eastside location during the potential exposure period. In the western United States, deer mice

(*Peromyscus maniculatus*) shed hantavirus in their feces, urine, and saliva. Deer mice were trapped at home sites of four cases, and for two sites they tested positive for Sin Nombre hantavirus antibody.

Twenty-one HPS cases have been documented in Washington residents since 1985. A fatal case that occurred in Lincoln County in 1985 was confirmed retrospectively in 1994. A 1994 case in Adams County was confirmed serologically in 1996. From 1994 to 1999, between two and five HPS cases have been reported in the state each year. The 21 infected persons ranged in age from 20 to 75 years, and 13 (62%) have been men. Eight persons (38% of cases) have died.

*Continued page 2*



## Hantavirus *(from page 1)*

Nineteen of those infected lived in rural locations, including eight on farms that raised livestock or crops. The 21 cases occurred in residents of eleven counties, 13 (62%) in counties east of the Cascade Mountains. Peridomestic exposure was reported or detected on investigation for 17 of 21 persons with HPS and included handling rodent nests, handling dead rodents and traps, and cleaning or vacuuming rodent droppings. Several infected persons reported working in rodent-infested buildings, vehicles, or fields. All those with potential occupational exposure also had evidence of rodents in the home setting. Two traveled out of state during the six weeks before illness onset and were potentially exposed elsewhere.

Thirteen of the 21 infected persons (62%) had onset of illness from May to July, the most common month for onset with six cases. HPS begins one to six weeks after rodent exposure. Patients experience a prodromal phase lasting one to seven days with fever, chills, and body aches sometimes including severe back and leg pains. Nausea, vomiting, diarrhea, and abdominal pain may occur. Cough and shortness of breath occur four to 12 hours before onset of respiratory failure. See the July 1998 issue of *epiTRENDS* (Vol. 3, No. 7; <http://www.doh.wa.gov>) for a description of laboratory findings.

Nationally, 231 HPS cases in 30 states have been reported as of December 13, 1999. Forty-two percent of all cases have

been fatal, although since 1994 the case fatality rate has declined to 34%. Most cases have occurred in the western United States, which coincides with the range of the deer mouse, which has a white belly and furry tail that is dark on top and white on the entire underside.

Deer mice testing positive for Sin Nombre hantavirus antibody have been found in 15 of 23 counties surveyed in Washington (Figure 1). Of 882 deer mice tested, 10.5% have been seropositive. Transmission to humans likely occurs through inhalation of airborne virus particles or direct contact with the rodents, their excretions, or their nesting materials.

## Department of Health Rolls Out Aggressive Plan for Tobacco Prevention and Control

The Department of Health recently released a comprehensive plan to reduce tobacco use in Washington. The plan recommends spending about \$26 million in each of the next two years to prevent initiation of tobacco use in youth and young adult, promote quitting among youth and adults, eliminate exposure to environmental tobacco smoke, and identify and eliminate disparities in tobacco use in high-risk populations. To reach these goals, the plan calls for a variety of activities in six areas:

- *Community-based programs* will build on existing tobacco prevention and control efforts.
- *School-based programs* expect to reach nearly one million children and youth with tobacco prevention education.
- *Cessation activities* will help tobacco users to quit.
- *Public awareness and education* efforts will use mass media campaigns to counter the tobacco industry's marketing.
- *Youth access activities*, already in existence to prevent young people from purchasing tobacco products, will be shored up to further reduce sales to minors.
- *Assessment and evaluation* will allow the Department of Health to monitor results and make sure the programs are working.

For additional information or copies of the plan, contact Julia Dilley, assessment lead for the Tobacco Prevention and Control Program, at 360-236-3632, or visit the DOH web site, <http://www.doh.wa.gov/tobacco>.

### For More Information

If you have questions, please contact:

#### Department of Health

DOH Zoonotic Disease Program, 360-236-3362; DOH Communicable Disease Epidemiology, 206-361-2914

#### Centers for Disease

#### Control and Prevention

CDC Hantavirus voice information, 1-877-232-3322; CDC fax retrieval service, 1-888-233-3228; CDC Special Pathogens Branch, 1-404-639-1510; CDC website, <http://www.cdc.gov/ncidod/diseases/hanta/hantvrus.htm>

FIGURE 1: Surveillance of rodents for hantavirus, 1993–1999

Map not available in electronic format.

● Human Case    + Rodents Found    ■ Rodents Tested, zero +

# Monthly Surveillance Data by County

December 1999\* – Washington State Department of Health

County	E. coli O157:H7	Salmonella	Shigella	Hepatitis A	Hepatitis B	Non-A, Non-B Hepatitis	Meningococcal Disease	Pertussis	Tuberculosis	Chlamydia	Gonorrhea	AIDS	Pesticides†	Lead\$#
Adams	0	0	1	0	0	0	0	0	0	2	0	0	0	0/#
Asotin	0	1	0	0	0	0	1	0	0	1	0	0	0	0/0
Benton	0	3	2	1	3	0	0	0	1	23	1	0	0	0/19
Chelan	0	1	0	2	0	0	0	0	0	8	0	0	0	1/#
Clallam	0	0	0	0	0	0	0	0	0	14	1	0	0	0/#
Clark	0	1	0	7	0	0	1	1	0	51	5	1	0	0/#
Columbia	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Cowlitz	0	1	1	0	0	0	1	0	0	16	4	0	0	1/32
Douglas	0	0	1	0	0	0	0	0	0	3	0	0	0	0/0
Ferry	0	0	0	0	0	0	0	0	0	2	0	0	0	0/0
Franklin	0	3	1	0	2	0	0	0	1	10	0	0	0	0/0
Garfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Grant	0	0	1	1	0	0	0	0	0	11	1	0	0	0/#
Grays Harbor	0	1	0	0	0	0	0	0	1	0	0	0	0	0/0
Island	0	0	0	0	0	0	0	0	0	5	0	0	0	0/0
Jefferson	0	0	0	0	0	0	2	0	1	4	0	0	0	0/0
King	19	35	20	133	23	2	3	29	14	393	87	6	1	1/47
Kitsap	0	2	0	0	0	0	0	2	0	66	11	0	0	0/12
Kittitas	0	0	0	0	0	0	0	3	0	3	0	0	0	0/0
Klickitat	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Lewis	0	0	0	0	0	0	0	1	1	4	0	0	0	0/#
Lincoln	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Mason	0	0	0	0	0	0	0	0	0	6	1	0	0	0/0
Okanogan	0	1	0	0	0	0	0	1	1	8	1	0	0	0/#
Pacific	0	0	0	0	0	0	0	0	0	0	0	0	0	0/#
Pend Oreille	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Pierce	5	4	3	3	0	0	1	2	6	222	92	5	1	0/38
San Juan	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Skagit	0	0	1	0	2	0	1	0	0	25	1	1	0	0/0
Skamania	0	0	0	0	0	0	0	0	0	0	0	0	0	0/0
Snohomish	1	8	1	11	0	0	0	8	1	113	12	1	1	0/#
Spokane	1	3	2	1	0	0	1	0	2	51	15	0	0	1/19
Stevens	0	1	0	1	0	0	0	0	0	0	0	0	0	0/0
Thurston	0	4	0	0	0	0	3	1	1	36	4	0	0	0/#
Wahkiakum	0	0	0	0	0	0	0	0	0	1	0	0	0	0/0
Walla Walla	1	0	0	0	0	0	0	0	1	9	0	0	0	0/22
Whatcom	0	5	1	1	1	0	0	0	0	27	2	0	0	0/#
Whitman	0	1	0	0	0	0	0	0	0	0	0	0	0	0/#
Yakima	0	5	1	1	0	0	1	0	1	64	6	0	0	0/6
Unknown														0/0

Current Month	27	80	36	162	31	2	15	48	32	1178	244	14	3	4/223
December 1998	38	236	72	126	33	7	17	98	28	1084	169	39	5	10/469
1999 to date	175	698	142	477	97	21	78	679	258	11964	2132	350	287	112/3606
1998 to date	143	703	277	1037	136	29	77	406	265	10997	1948	426	408	138/3822

\* Data are provisional based on reports received as of December 31, unless otherwise noted.

† Unconfirmed reports of illness associated with pesticide exposure.

\$# Number of elevated tests (data include unconfirmed reports) / total tests performed (not number of children tested); number of tests per county indicates county of health care provider, not county of residence for children tested; # means fewer than 5 tests performed, number omitted for confidentiality reasons.



## WWW Access Tips

Information on antibiotic resistance is available from the Centers for Disease Control and Prevention at <http://www.cdc.gov/ncidod/dbmd/antibioticresistance/default.htm> — and from the Alliance for Prudent Use of Antibiotics at <http://www.healthsci.tufts.edu/apua/apua.html>

## Information Materials

If you are interested in receiving either the patient education materials or the flow charts of best practices, please contact Jac Davies at 206-361-4883 or via email: [jac.davies@doh.wa.gov](mailto:jac.davies@doh.wa.gov)

## Reference

Dowell S: Principles of judicious use of antimicrobial agents for pediatric upper respiratory tract infections. *Pediatrics* 1998; 101:163-184.

# Antibiotic Resistance *(from page 1)*

are not susceptible to penicillin has not changed. The number of totally resistant isolates has decreased slightly, while those showing intermediate resistance have increased slightly. The CDC's nationwide active surveillance data also show this plateau of resistance during the same period. It is too early to tell whether this plateau is a long-term trend or a temporary stabilization of the DRSP incidence. Leveling of penicillin resistance is an encouraging finding and may reflect efforts to control the widespread overuse of antibiotics.

While it is not possible to connect Washington's antibiotic resistance campaign directly to the stabilization of DRSP rates, indications are that the public has heard and is beginning to understand the need for careful use of antibiotics. If public awareness continues or increases, the pressure on providers to prescribe antibiotics unnecessarily will decrease. For this reason, the Department of Health and its partners in the antibiotic resistance campaign will conduct further public education activities in 2000, including offering new patient education materials to providers and any other groups interested in this issue.

Coupled with the public education efforts, DOH is sending providers flow charts that summarize the latest recommendations from the scientific literature on judicious antibiotic use for acute sinusitis/rhinitis, pharyngitis, cough illness/bronchitis, and otitis media. These flow charts have been prepared by a work group of Washington pediatricians, family practitioners,

and infectious disease specialists at the request of the Association of Washington Health Plans. They summarize and cite recommended best practices in a simple one-page format.

**TABLE 1: Comparison of DRSP surveillance system results**

	Surveillance Year	
	1997-98	1998-99
<b>Overall Resistance</b>		
Number of Isolates	300	265
	<i>Percent</i>	
Susceptible	77.7	77.7
Intermediate	10.7	15.5
Resistant	11.7	6.8
Total Nonsusceptible	22.4	22.3
<b>Penicillin Resistance</b>		
Number of Isolates	191	220
	<i>Percent</i>	
Susceptible	76.4	74.1
Intermediate	13.1	17.7
Resistant	10.5	8.2
Total Nonsusceptible	23.6	25.9
<b>Extended Spectrum Cephalosporin Resistance</b>		
Number of Isolates	191	220
	<i>Percent</i>	
Susceptible	89.5	90.5
Intermediate	3.7	5.0
Resistant	6.8	4.5
Total Nonsusceptible	10.5	9.5

Penicillin minimum inhibitory concentration:  
intermediate, 0.12-1 ug/mL; resistant, > 2 ug/mL.  
ESC minimum inhibitory concentration:  
intermediate, 1 ug/mL; resistant, > 2 ug/mL

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